

L11 ANSWER 1 OF 45 CAPLUS COPYRIGHT 2000 ACS  
 AN 2000:756609 CAPLUS  
 TI The use of **microfluidic** systems in the electrochemical detection  
 of target analytes  
 IN Kayyem, Jon Faiz  
 PA Clinical Micro Sensors, Inc., USA  
 SO PCT Int. Appl., 119 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000062931	A1	20001026	WO 2000-US10903	20000421
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			

PRAI US 1999-295691 19990421

AB Figure (1) depicts some preferred embodiments of the invention. Figure (1A) depicts a solid support (5) that has a sample inlet port (10), a first **microchannel** (15), a storage module (25) (for example, for assay reagents) with a second **microchannel** (20). The second **microchannel** (20B), may be in fluid contact directly with the detection module (30) comprising a detection electrode (35), or (20A), a **self-assembled monolayer** and a binding ligand. Figure (1B) depicts a sample handling well (40) and a second storage well (25A) with a **microchannel** (20) to the sample handling well (40). For example, the sample handling well (40) could be a cell lysis chamber and the storage well (25A) could contain lysis reagents. Figure (1C) depicts a sample handling well (40) that is a cell capture or enrichment chamber, with an additional reagent storage well (25B) for elution buffer.

Figure (1D) depicts the addition of a reaction module (45), with a storage module (25C), for example for storage of amplification reagents.

Optional waste module (26) is connected to the reaction module (45) via a **microchannel** (27). All of these embodiments may additionally comprise valves, waste wells, and pumps, including additional electrodes.

L11 ANSWER 7 OF 45 CAPLUS COPYRIGHT 2000 ACS  
 AN 2000:68641 CAPLUS  
 DN 132:119555  
 TI Microdevices for screening biomolecules  
 IN Wagner, Peter; Ault-Riche, Dana; Nock, Steffen; Itin, Christian  
 PA Zyomyx, Inc., USA  
 SO PCT Int. Appl., 78 pp.  
 CODEN: PIXXD2

DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000004390	A2	20000127	WO 1999-US15969	19990714
	WO 2000004390	A3	20000504		
	W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	AU 9951024	A1	20000207	AU 1999-51024	19990714
PRAI	US 1998-115397		19980714		
	WO 1999-US15969		19990714		
AB	Methods and devices for the parallel, in vitro screening of biomol. activity using miniaturized <b>microfabricated</b> devices are provided. The biomols. immobilized on the surface of the devices of the present invention include proteins, polypeptides, polynucleotides, polysaccharides, phospholipids, and related unnatural polymers of biol. relevance. These devices are useful in drug development, functional proteomics and clin. diagnostics and are preferably used for the parallel screening of families of related proteins.				
L11	ANSWER 11 OF 45 CAPLUS COPYRIGHT 2000 ACS				
AN	1998:724606 CAPLUS				
DN	130:78214				
TI	<b>Microfabricated</b> components for integrated chemical analysis				
AU	Johnson, Brian N.; Handique, Kalyan; Sammarco, Timothy S.; Webster, James R.; Man, P. F.; Brahmasandra, Sundares N.; Burke, David T.; Mastrangelo, Carlos H.; Burns, Mark A.				
CS	Dept. of Chemical Engineering, The University of Michigan, Ann Arbor, MI, 48109-2136, USA				
SO	Proc. - Electrochem. Soc. (1998), 98-14(Microstructures and Microfabricated Systems IV), 43-53 CODEN: PESODO; ISSN: 0161-6374				
PB	Electrochemical Society				
DT	Journal				
LA	English				
AB	A useful integration scheme for chem. anal. systems involves <b>microfabricating</b> the components on a single substrate. We have used <b>microfabrication</b> techniques to construct an integrated biochem. anal. device that can analyze nanoliter-sized DNA samples. The device components include: a liq. injection system that relies on hydrophobic/hydrophilic boundaries to control liq. flow and inject nanoliter-sized drops; movement by a variety of techniques, including a mechanism based on induced temp. differences termed thermocapillary pumping; and a chem. detection system using diodes to detect the presence of either radioactively or fluorescently labeled mols. Each of these individual components can be combined with the others to form increasingly				

complex integrated systems. The advantage of this approach is the potential for low-cost prodn. of complex chem. sensors. Our current application of this technol. is to the genotyping and sequencing of DNA.

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- (1) Burns, M; Proc Natl Acad Sci USA 1996, V93, P5556 CAPLUS
- (2) Handique, K; Proceedings of SPIE Conference on Micromachined Devices and Components 1997, V3224, P185 CAPLUS
- (3) Man, P; International Conference on Micro Electromechanical Systems (MEMS 98) 1998, P45 CAPLUS
- (4) Shoji, S; Technical Digest of the 9th Sensor Symposium 1990, P27
- (6) Webster, J; International Conference on Solid State Sensors and Actuators (Transducers ` 97) 1997, P503 CAPLUS

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L11 ANSWER 15 OF 45 CAPLUS COPYRIGHT 2000 ACS

AN 1998:30836 CAPLUS

DN 128:122041

TI **Microfabrication**, microstructures and microsystems

AU Qin, Dong; Xia, Younan; Rogers, John A.; Jackman, Rebecca J.; Zhao, Xiao-Mei; Whitesides, George M.

CS Department of Chemistry and Chemical Biology, Harvard University, Cambridge, MA, 02138, USA

SO Top. Curr. Chem. (1998), 194 (Microsystem Technology in Chemistry and Life Science), 1-20

CODEN: TPCCAQ; ISSN: 0340-1022

PB Springer-Verlag

DT Journal; General Review

LA English

AB This review, with 146 refs., gives a brief introduction to materials and techniques used for **microfabrication**. Rigid materials have typically been used to fabricate microstructures and systems.

Elastomeric

materials are becoming attractive, and may have advantages for certain types of applications. Photolithog. is the most commonly used technique for the fabrication of structures for microelectronic circuits, microelectromech. systems, microanal. devices and micro-optics. Soft lithog. represents a set of non-photolithog. techniques: it forms micropatterns of **self-assembled monolayers**

(SAMs) by contact printing and generates microstructures of polymers by contact molding. The aim of this paper is to illustrate how non-traditional materials and methods for fabrication can yield simple, cost-effective routes to microsystems, and now they can expand the capabilities of these systems.

L11 ANSWER 17 OF 45 CAPLUS COPYRIGHT 2000 ACS

AN 1997:764569 CAPLUS

DN 128:41499

TI **Microfluidic** flow control using selective hydrophobic patterning

AU Handique, K.; Gogoi, B. P.; Burke, D. T.; Mastrangelo, C. H.; Burns, M. A.

CS Department of Chemical Engineering, The University of Michigan, Ann Arbor,

MI, 48109-2136, USA

SO Proc. SPIE-Int. Soc. Opt. Eng. (1997), 3224 (Micromachined Devices and

- Components III), 185-195  
CODEN: PSISDG; ISSN: 0277-786X
- PB SPIE-The International Society for Optical Engineering  
DT Journal  
LA English  
AB We have developed a method to pattern **Self Assembled Monolayer** (SAM) films of n-octadecyltrichlorosilane (OTS) on silicon and glass substrates using a simple lift-off procedure. By defining hydrophobic regions at definite locations in **microchannels** and using an external pressure source, we can split off precise nanoliter vol. liq. drops and control the motion of those drops through the **microchannels**. We have also constructed an on-chip pressure source for drop splitting and motion by heating air trapped in a micromachined chamber. Both techniques can produce and move drops on the order of 50 nL.
- L11 ANSWER 35 OF 45 CAPLUS COPYRIGHT 2000 ACS  
AN 1995:925264 CAPLUS  
TI **Self-Assembled monolayers** and related systems in nano-and **microfabrication**  
AU Whitesides, George  
CS Dept. Chemistry, Harvard University, Cambridge, MA, 02138, USA  
SO Book of Abstracts, 210th ACS National Meeting, Chicago, IL, August 20-24 (1995), Issue Pt. 2, PHYS-066 Publisher: American Chemical Society, Washington, D. C.  
CODEN: 61XGAC  
DT Conference; Meeting Abstract  
LA English  
AB **Self-assembled monolayers** (SAMs; particularly SAMs of alkanethiolates on gold) provide a route into a range of structures with dimensions of 1-20 nm in at least one dimension. This talk will summarize these fabrication techniques, with an emphasis on microcontact printing ( $\mu$ CP) and micromolding in capillaries (MIMIC).
- L11 ANSWER 40 OF 45 CAPLUS COPYRIGHT 2000 ACS  
AN 1995:538753 CAPLUS  
DN 123:66513  
TI Patterned **Self-Assembled Monolayers** and **Meso-Scale** Phenomena  
AU Kumar, Amit; Abbott, Nicholas L.; Biebuyck, Hans A.; Kim, Enoch; Whitesides, George M.  
CS Department of Chemistry, Harvard University, Cambridge, MA, 02138, USA  
SO Acc. Chem. Res. (1995), 28(5), 219-26  
CODEN: ACHRE4; ISSN: 0001-4842  
DT Journal; General Review  
LA English  
AB A review with 46 refs. on the prepn. and application of **self-assembled monolayers** (SAMs) of org. mols. on metallic substrates for use as patterns. Applications include micro-machining, micro-contact printing, micro-writing, micro-electrodes, patterned substrates in spectroscopy (optical gratings), microlenses, and cell biol. (surface immobilization).

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